

## **REMARKS**

### **I. Introduction**

In response to the pending Office Action, Applicants have amended to Fig. 1 to include the legend "Prior Art". In addition, claims 1, 7, and 13 have been amended to more specifically recite the subject matter of the present invention. No new matter has been added. For the reasons set forth below, Applicants respectfully submit that all pending claims are in condition for allowance.

Applicants also acknowledge with appreciation the indication of allowable subject matter being recited by claims 2-3, 8-9 and 14-15.

### **II. The Rejection Of The Claims Under 35 U.S.C. § 102**

Claims 1, 4-7, 10-13 and 16-18 were rejected under 35 U.S.C. § 102(b) as being anticipated by the admitted prior art (AAPA) disclosed in the specification. For the following reasons, it is respectfully submitted that the foregoing claims, as amended, are patentable over the cited prior art.

Claims 1, 7 and 13, the pending independent claims, have been amended to recite that the order of the sigma delta interpolator,  $N$ , is at least 2 or greater. As such, each claim also recites that at least the two most significant bits output by the accumulator are coupled to the multi-modulus divider, and are operative to control the operation of the multi-modulus divider. In contrast, referring to Fig. 2 of the specification, the AAPA only discloses a single bit (i.e., the carry out signal 27) output by the accumulator being coupled to the variable divider circuit 20. In other words, the AAPA only discloses a first order sigma delta interpolator, and therefore does not disclose the claimed sigma delta interpolator of the present invention, which recites that the order of the sigma delta interpolator is at least two. Moreover, as explained in the background section of the application, prior art techniques that attempted to form higher order sigma delta interpolators utilized multiple modulators/accumulators in the design, resulting in complex and expensive circuits. Importantly, the prior art designs did not disclose that the order of the sigma delta interpolator,  $N$ , is at least two or greater, and that at least the two most significant bits output by the accumulator are coupled to the

multi-modulus divider, and operative to control the operation of the multi-modulus divider. At a minimum, the AAPA does not disclose this limitation.

Accordingly, as anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, ***Kalman v. Kimberly-Clark Corp.***, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), for at least the foregoing reasons, it is clear that the AAPA fails to anticipate either claims 1, 7 or 13, as amended, or any claim dependent thereon.

**III. All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, ***Hartness International Inc. v. Simplimatic Engineering Co.***, 819 F.2d at 1100, 1108 (Fed. Cir. 1987).

Accordingly, as claims 1, 7 and 13 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also in condition for allowance.

**IV. Request For Notice Of Allowance**

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at 301-601-7252.

Respectfully submitted,

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**IN THE DRAWINGS:**

Please amend Fig. 1 to include the legend "Prior Art" as indicated on the enclosed amended version of Fig. 1.